- Manual

SATEX   SA 240

- Certified multi-interval Scale
- High Resolution type
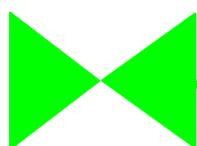
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General

Thank you for purchasing this SATEX precision balance !
This scale is equipped with reliable technology and has user friendly operational software.
You will use it many times and it will prove itself to be an easy, speedy and accurate tool.

If any questions raise that are not described in this manual, please address yourselves to your SATEX supplier,
have a look at our website : www.satex.nl or send your questions per email to : info@satex.nl

Application, Weight and Measures certified

The SA 230 precision balance is designed for accurate weighing, for counting of articles and weighing in %.

The scale is designed for use in dry, inside conditions, but is supplied with a transparent cover that protects the scale
and display window against filth and pollution.

Take care of a stable position of the scale. Place it in accurate level position with the help of the 4 levelling feet and
the level indicator in the front panel.   Important : all 4 of the feet should carry the scale equally.

The CE (OIML R76 1992 class III) Certificate of this scale is valid in all European countries (not the HR type).
It is permitted to use the scale, if stamped individually, for weighing for trade purposes. However there is no difference
between the accuracy of a stamped or not stamped scale. Even if the scale has been purchased without the legal
stamping, it may be stamped later on, if the scale still is in good condition.

Safety

Please read this manual thoroughly before start using the scale.
The supplier does not accept any responsibility if the guidelines of this manual are not observed.

Before any work is done on the scale, power connections from the mains adaptor and the internal battery should
be interrupted. Warranty is void if the scale is opened anyhow.
Breaking of the seal of a stamped scale is a criminal act and causes the complete disapproval of the scale.

The instrument fulfils the requirements laid down in the EG regulations 89/336/EWG and 73/23/EWG for
electromagnetic compatibility and the Council Directive 90/384/EEC for not automatic weighing machines. Exceeding
of the maximum values, laid down in these regulations, must be avoided.
Electrostatic discharges may cause fatal damage to the scale and should be avoided
at all times. A.o. a proper earth connection of the scale and the place of erection is required in such cases.
The mains adaptor has no special protection against humidity and water and should not come into contact with it.
In case this has happened, or the adaptor shows any external damage, the adaptor should not be used any longer.

The built in lead battery should, if it has to be replaced, be disposed off as small chemical waste, not to be added to
normal waste.

Maintenance

Except from regular cleaning with a slightly humid cloth and a not aggressive detergent, further maintenance
is not required.
However it makes sense to check the scale's weighing accuracy with regular intervals, using accurate calibration
weights. Stamped scales are sealed, but a not stamped scale may be adjusted by the user itself using accurate Class
M1 weights.
The transparent cover may be ordered as a spare part.

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Start up

Power input
on/off switch

270

210
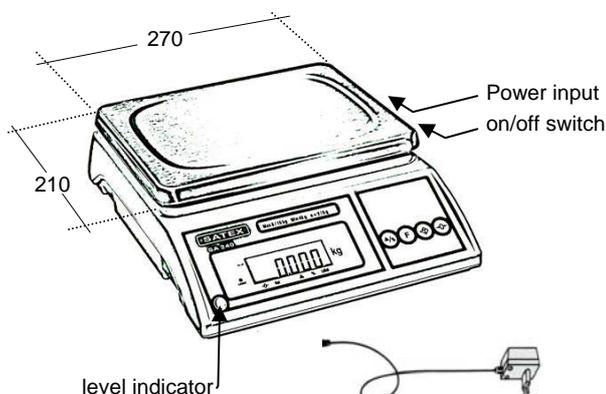
level indicator

▸ Unpack the scale carefully.
▸ Check the presence of:
   - scale
   - stainless steel weigh platform with abs carrier
   - transparent cover
   - mains adaptor in carton box
   - manual

▸ Set the scale level by means of the 4 levelling feet and the level indicator. Arrange for a stable position of the scale.

▸ Plug in the mains adaptor and operate the on / off switch (with empty weigh platform!).

▸ Scale sets automatically zero and is ready for use now.

▸ The built in battery allows for max 200 hours stand alone operation.

Caused by differences in temperature it may last until 10 minutes before the reading of the weight is completely accurate.

Place the articles to be weighed carefully on the weigh platform. Prevent for bumping against and overloading of the weighing platform. The loadcell down under it may be damaged seriously.

Check, if necessary, the accuracy with an accurate calibration weight. Using the calibration procedure (see "menu 2") the scale may be re-adjusted. Stamped scales are sealed to prevent for illegal adjustments

At first start up the built in battery may be not completely loaded. Re-load the battery by leaving the scale for at least 16 hours with a connected mains adaptor.

Technical specifications

Double weighing ranges	: - 3 / 6 kg with 1 / 2 g divisions, HR type with 0,1 / 0,2 g divisions
	  - 6 / 15 kg with 2 / 5 g divisions, HR type with 0,2 / 0,5 g divisions
	  - 15 / 30 kg with 5 / 10 g divisions, HR type with 0,5 / 1 g divisions

Accuracy	: fulfils the legal requirements of EN 45501 for new scales at loads of:
	      0 - 500 divisions = < ½ division
	    500 - 2000 divisions = < 1 division HR type + or - 3 divisions
	  2000 - 3000 divisions = < 1½ division

Environmental	: in operation: 0° … +40° C, in stock: -10° … + 55°C 85% RH
Housing	: ABS with aluminum frame's, IP 54 closed, dimensions 320 x 275 x 110 mm (lxwxh), weight 3,9 kg
Power supply	: mains adaptor 230 VAC 50 Hz 60 mA, output 9 VDC 500 mA, built in battery and battery charger
Operational time on battery	: 200 / 85 hours without / with display backup lightning switched on
Battery charging time	: minimal 16 hours for a full charge
Automatic switch off	: settable: auto switch off after 5, 10, 20, 30 minutes standstill or switched on continuously
Display back light	: settable: on, off, or automatic switch on as soon as weigh platform is loaded with weight (reading > 0)

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Display: keys   display symbols

Front panel

Keys:

→0←	Set zero of gross weight value, range + and - 2 % of weighing capacity.
T	Tare = set zero within the complete weighing capacity
F	Switches reading from pieces (or %) to weight value and back
⚖/%	Starts piece counting program and % weighing mode

Display symbols:

▼◢	If the sign ○ in the display next to it is "on", the reading has come to a standstill
→0←	If the sign ▼ above the symbol is "on", the reading is exact zero, within 0,2 division
Net	If the sign ▼ above the symbol is "on", the reading is the net weight: a tare value has been subtracted
♣	If the sign ▼ above the symbol is "on", the reading gives the number of counted articles
%	If the sign ▼ above the symbol is "on", the reading gives the % of pre-set 100% weight value
LoBatt	If the sign ▼ above the symbol is "on", the battery is empty : recharge the battery
● LADEN	The scale is connected to the 230 V . As long as the indication is yellow, the battery is loading.

Multi interval reading

Part of the total weighing capacity of a SA 240 scale, is a second, partial weighing range with an enlarged weighing and reading accuracy. So the scale has more than one reading accuracy's: "multi interval".

F.e.:   at a 6 / 15 kg scale the 6 kg range always can be read with 2 gram accuracy, whilst the total range up to 15 kg has a reading accuracy of 5 grams. It is like a kind of magnifying glass, operated by the tare key..

After each tare operation, this high accuracy reading starts again down from that zero value.

So, in the example, after each taring, the reading is per 2 gram accurate for the next 6 kg upwards and downwards.

The switching over to this high accuracy reading is fully automatic.

This feature brings just than a big advantage, if first a big quantity is filled, and after that small additives must be added with a relative high accuracy.

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Switching on

Lod . . .

The on/off switch is located in a saving down under at the right side of the instrument.
At switching on the display shows short: "Lod . . ." (Loading)

999999

During the start up sequence the display counts backwards from 999999 to 000000 .

nE210

After that the software program number is shown : nE 210 .

0.000

As soon as exact standstill of the weight signal is present, the scale will set itself automatically at zero. Only than the symbol: O lights up next to the symbol ◣◢ and the reading set zero. The symbol ▾ above →0← lights up.

After maximal 10 minutes warming up time the measuring system is stabilized and the scale is ready to be used.

Zero setting

0.002

If the unloaded weigh platform not presents a "zero" reading, operate the →0← key. The zero setting range is max 2% of the weighing capacity.
Outside this range a key operation of the →0← key will not be executed.

If more than 2 % zero setting is required, switch the scale off and on again.
The zero setting range than is + and - 10% (see: error reports)

Tare   (taring is setting zero over the complete weighing range)

0.00

Place f.e. an empty carton on the platform and operate key: ⊕ .
After standstill the reading sets zero.
The arrow ▾ at NET indicates a tare value is in operation: reading is net value.
This may be repeated up to the maximum weighing capacity.
Delete a tare with empty weigh platform, operating key : ⊕
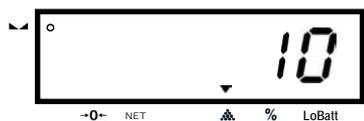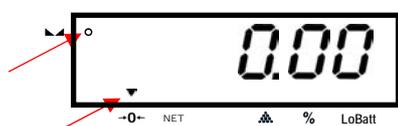
Plus / minus weighing   (in weighing mode only)

- 0.132

Place an article with the correct weight on the platform, operate key: ⊕
The reading sets zero. The **NET** arrow ▾ appears.
Now place the article to be checked and read the deviation in + of - .
Delete a tare with empty weigh platform, operating key: ⊕

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Counting pieces

1. First count by hand a number of articles: 10, 20, 50,100 or 200 pieces.
   The lighter the article, the more should be used for an accurate reference
   weighing.

2. Take care of a precise zero (▼ at : →0←) and standstill (O at : �) of
   the reading and place the pre-counted articles in one time on the scale.

3. Press key : [⚖/%] . The numbers that are available for the reference weighing
   now automatically are shown on the display: 10, 20, 50, 100, 200.
   Press again key : [⚖/%] at the moment the correct number is displayed.

4. The scale is now counting the number of articles, the display shows the
   number of articles. The ▼ at ⚖ shows the counting mode is in operation.

5. With key [F] may be switched from the counting mode to the weighing
   mode and back. In the weighing mode the article weight is kept memorized.

For counting a new article, return to the weighing mode by key : [F] and
start at point 1 of this sequence.

Note: negative counting after taring is not possible.

% weighing

1. Take care of a precise zero reading (▼ at : →0←) and standstill (O bij : btbd)
   of the reading.

2. Place a weight (article) of exact 100% of the required weight on the
   weigh platform

3. Press key : [⚖/%] . After the reference numbers for the counting procedure
   the value: **100.0** appears and the ▼ at % switches on.
   As long as this: **100.0** is displayed, press key : [⚖/%] .

4. The scale is now weighing in % of the 100% value that just has been
   entered. The display shows this percentage with an accuracy of 0,1%.
   The ▼ at % shows the % weighing mode is in operation.

5. With key [F] may be switched from the % mode to the weighing mode
   and back. In the weighing mode the % weight is kept memorized.

For weighing with a new 100% value, press key [F] for returning to
the weighing mode and start at point 1 of this sequence.

Note: negative % weighing after taring is not possible.

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Menu : program   USER mode

CAL

The programming mode is made accessible by pressing key **F** during switching on the scale by the on/off switch.
As soon as the display shows : CAL release the key.

$CAL \quad 1$
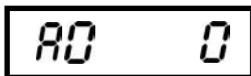
Press key **F** again to select Menu 1 or Menu 2.
In legally stamped scales, and on request of the purchaser (to be indicated with the order) calibration menu 2 is locked up and cannot be selected.

$CAL \quad 2$

Press key : ⊕ to enter into the menu.

MENU 1   USER mode   (functions that always are settable by the user)

Automatic zero setting   (**A**uto **0**, keeps reading automatically on zero)

$A0 \qquad 0$ *off*

The automatic zero setting may be switched off, or set active within ½ division around the actual zero.

With key **F**   the available choices may be shown one by one.

$A0 \qquad 1$ *½ division*

With key ⊕   the shown choice may be selected, after that the program will automatically step to the next menu function.

It is advised to deselect the auto zero if slow, small dosings starting from zero are regular procedures. This prevents for unwanted auto zero actions.

Automatic switch off   (battery saving)

The Auto off function switches off the scale automatically after . . minutes of standstill (not active in the programming modes).

$A.°FF \; 0$

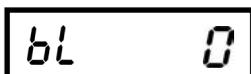|		
0	=	auto off switched off
1	=	5 minutes
2	=	10 minutes
3	=	20 minutes
4	=	30 minutes

↕

$A.°FF \; 4$

With key **F**   the available times may be shown one by one.

With key ⊕   the shown choice may be selected, after that the program will automatically step to the next menu function.

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Back Light   display   (battery saving)

```
bL    0
```
```
bL    1
```
```
bL    2
```

The back lightning of the display may be selected as:

0   = always off
1   = always on
2   = automatically switching on at loading (reading > 0)

With key [F]   the available choices may be shown one by one.

With key [⟡]   the shown choice may be selected, after that the program will automatically step to the next menu function.

Limiting tare operations

```
tA    0
```
```
tA    1
```

Standard there is no limit for the number of tarings that may be executed during one weighing operation.

However this number may be limited to only one time taring, after that the present taring should be cancelled first, before a new taring is possible.

0   = 1 x taring limit
1   = unlimited taring

With key [F]   the available choices may be shown one by one.

With key [⟡]   the shown choice may be selected.

After this step the USER menu is automatically shut down. The scale will return to the start mode and goes to the normal weighing mode.

In order to enter into Menu 2 (calibration and adjustment), the scale has to be switched off and on again with key [F] pressed down.

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Menu : program   CALIBRATION mode

`CAL`

`CAL    1`

`CAL    2`

The programming mode is made accessible by pressing key **F** during switching on the scale by the on/off switch.
As soon as the display shows : CAL release the key.

Press key **F** again to select Menu 1 or Menu 2.
In legally stamped scales, and on request of the purchaser (to be indicated with the order) calibration menu 2 is locked up and cannot be selected.

Press key : ⊕ to enter into the menu.

MENU 2   CALIBRATION mode   (locked up in legally stamped scales and on request)

Attention !
In legally stamped scales the Calibration Mode is not accessible. Only the breaking of the legal sealing makes this function internal accessible. Breaking this sealing terminates the warranty. Above that is the breaking of the seal in juridical sense a criminal act that is punishable by fine or imprisonment.

Weighing capacity

`6 d`

`15 d`

`30 d`
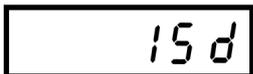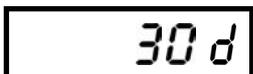
There are three capacities selectable. This choice is dependent of the capacity of the loadcell that is applied. Therefore never change the weighing capacity to a higher range. Selecting a lower capacity may cause insufficient accuracy.

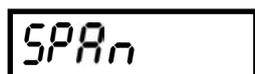 6 d = 3 / 6 kg scale capacity
15 d =   6 / 15 kg scale capacity
30 d = 15 / 30 kg scale capacity

With key **F**   the available choices may be shown one by one.

With key ⊕   the shown choice may be selected, after that the program will automatically step to the next menu function.

If only adjusting of the scale is required, skip this choice by pressing key ⊕.

Adjusting the scale

`SPAn`

The adjustment procedure starts with the display reading: SPAn.
This means that in the following steps the weighing range will be equalized to a set weight value. The accuracy of the applied weight will determine the scale's accuracy.

Take care of an empty weigh platform that is installed in a proper way. Check the level position of the scale. The 4 feet have to support the scale with equal pressure.

Press key ⊕ to continue.

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| 11957 | The display now shows the AD value of the empty weigh platform.
The value should be between 8000 and 20000. |

| 0 | Press the zero key [⊶0⊷] in order to establish the zero point of the weighing range.
The value will be entered, the reading will go to an exact zero. |

Select a calibration weight value from the tabel below.
The available values are dependent of the selected weighing capacity.

Weighing capacity type of scale	Choice calibration weight
3 / 6 kg	2, 3, 6 kg
6 / 15 kg	5, 10, 15 kg
15 / 30 kg	10, 20, 30 kg

| 73560 | Place the selected weight on the weigh platform. The number in the display will increase. Wait until the reading has come to a complete standstill. |

| 5 | Press key [⟡] to start the choice of the weight value to be selected. |

Example:
6/15 kg
scale

| 10 | |
| 15 | Press key [⟡] again, as long as the correct value is shown.
Immediately the measured value will be entered. |

| 10.000 | Now the scale will automatically terminate the adjustment procedure and return to the weighing mode. |

| 0.000 | Take off the calibration weight and check whether the reading returns to an exact zero : 0.000 kg. If not, the calibration procedure should be repeated. |

The scale is now ready for use.

Attention ! The calibration procedure should not be interrupted, i.e. by switching off and on the scale. The parameters that has been entered already with the [⟡] key will not be deleted any more!

Interrupting the procedure at the moment the calibration weight should be placed upon the platform, causes an incorrect adjustment. The weight reading will be false and will show an "overload error" already with a light load on the scale.

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Errors and reports

Lod . . .

Lod . . . stays displayed. At switching on the zero value is too low.
Check the presence and correct position of the platform and carrier.
Possibly the loadcell is damaged.
Execute a calibration procedure.

_OL_
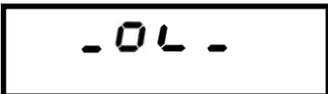
However the scale is switched on, it cannot set zero since the weigh signal is too high: more than 10% of the weighing capacity.
Remove the load from the weigh platform.

20.735

Setting zero by the zero key is not executed.
The weigh signal is outside the zero range (+ and - 2% of the weighing capacity).
Use the tare key to set zero. If required, switch the scale off and on with an empty weigh platform to establish a new zero setting.

-   0.322

Reading is gross negative . Zero and tare functions are disabled.
The scale has been switched on with a load on the platform and has set itself at zero with this load.
After that the loading has been removed and now the reading shows an incorrect, gross negative weight.
Switch the scale off and on again with an empty weigh platform.

r - - - - ٦
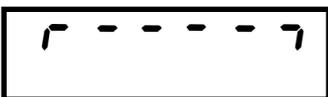
The scale is loaded above its weighing capacity.
Remove the overload.
Execute a calibration procedure.

L - - - - ⌐
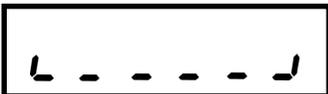
The weigh signal is far too negative. Check the presence and correct position of the platform and carrier. Check for contamination between weigh platform and housing.
Execute a calibration procedure.